Manuals
Service Manual

VDX-300

Illumination and Imaging System

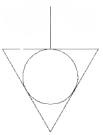
Operating Manual

809327
Rev. B

WelchAllyn®

System Symbol Descriptions

Attention. Read Operating Manual for Warnings, Precautions, and Instructions for Use.



Potential Equalization Stud

Dangerous Voltage: Refer Servicing to Qualified Personnel

Type BF Equipment

Type B Equipment

Warning: Risk of Fire. Replace Fuses as Marked.

Balance

Enhance

Hot

WARNINGS/CAUTIONS

CAUTION: IF THIS IMAGING AND ILLUMINATION SYSTEM IS USED DURING INVASIVE SURGERY, THE FAILURE OF A COMPONENT WITHIN THE SYSTEM, FOR EXAMPLE, LOSS OF VISUALIZATION, MAY INDIRECTLY CAUSE RISK TO THE PATIENT, THEREFORE, IT IS RECOMMENDED TO HAVE ALTERNATIVE MEANS AVAILABLE.

1. POSSIBLE EXPLOSION HAZARD. Do not use in the presence of flammable anesthetics.

2. THE TOP COVER OF THIS BOX SHOULD NEVER BE REMOVED. ELECTRICAL SHOCK HAZARD DUE TO HIGH INTERNAL VOLTAGE. THERE ARE NO USER SERVICEABLE PARTS INSIDE THIS IMAGING AND ILLUMINATION SYSTEM, EXCEPT FOR THE LAMP AND FUSE WHICH ARE ACCESSIBLE THROUGH THE BOTTOM AND BACK COVER PANELS.

3. PROVIDE VENTILATION TO PREVENT OVERHEATING. Provide adequate ventilation. Do not cover or drape imaging and illumination system.

4. Grounding reliability is acbieved only wben connected to "hospital-use" or "hospital-grade" receptacle. Inspect electrical plug and cord routinely. Do not use if damage is discovered.

5. WARNING: TOTAL SYSTEM RISK CURRENT - EXCLUDING THE PATIENT APPLIED PART (ENDOSCOPE) - SHOULD NOT EXCEED 100 MICROAMPS. AN ISOLATION TRANSFORMER IS REQUIRED IF TOTAL SYSTEM RISK CURRENT EXCEEDS 100 MICROAMPS WHEN ACCESSORIES ARE INTERCONNECTED. REFER TO OPERATING MANUAL FOR RECOMMENDED ISOLATION TRANSFORMERS AND PROPER MEASURING TECHNIQUES.

6. CAUTION: Always remove camera system from patient before connecting/disconnecting camera system to imaging and illumination system.

7. When possible, keep imaging and illumination system out of patient field. Always remove surgical imaging system from patient field while connecting/disconnecting camera.

8. Do not sterilize the imaging and illumination system. Refer to Operating Manual for cleaning instructions.

SEE OPERATING MANUAL FOR ADDITIONAL WARNINGS, PRECAUTIONS AND INSTRUCTIONS FOR USE.

LAMP REPLACEMENT

CAUTION: Lamp may be hot. Lamp voltage is 60 volts $\simeq$, 24 watts. Refer to Lamp Replacement section.

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CE 0050

"The CE mark on this product indicates it has been tested to and conforms with the provisions noted within the 93/42/EEC Medical Device Directive".

The "0050" accompanying the CE mark and the European Regulatory Manager's address noted in this manual are applicable only to products marketed directly by Welch Allyn, Inc. They do not apply to products labeled and marketed by other companies.

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Indications

Use of the Welch Allyn VDX-300 Illumination and Imaging System is indicated whenever video imaging is preferred over standard optical eyepiece imaging. The product is designed to provide video imaging for a wide range of rigid endoscopes as well as flexible endoscopes. For indications of use with each of these rigid and flexible scopes, the user must consult the operating manual for the specific rigid or flexible scope. The VDX-300 must only he used with endoscopes that are approved for their indicated use. This product must only he used hy qualified medical personnel.

Contraindications

The use of the Welch Allyn VDX-300 is contraindicated when a video image is not the preferred method of endoscopic visualization. For specific contraindications for various rigid and flexible scopes, the user must consult the operating manual for the particular scope heing used.

Additional Warnings and Precautions

To ensure patient and operator safety, read and understand this manual hefore using the VDX-300.

Care should he exercised during procedures, such that fluids do not migrate across insulations hetween the TYPE BF camera head and TYPE F endoscopes.

External equipment, which will he connected to signal input and signal output parts or other connectors, shall comply with relevant IEC standard (IEC 601 series for medical electrical equipment). In addition, all such comhinations - *systems*- shall comply with the standard IEC 601-1-1 (Safety requirements for medical electrical systems).

Any person who connects external equipment to signal input and signal output parts or other connectors has formed a system and is therefore responsihle for the system to comply with the requirements of IEC 601-1-1.

WARNING: Replace fuses as marked. See Fuse Replacement Section.

WARNING: The high intensity light at the front of the Platform Box, at the tip of the Fiher Optic Bundle, and at the tip of the endoscope may give rise to high temperatures. To minimize the risk of injury, avoid prolonged contact with tissue.

Be sure that the Fiber Optic Bundle and Camera Head are plugged into the Platform Box before turning the power ON.

Do not switch the VDX-300 system ON and OFF in rapid succession. Doing so will dramatically shorten lamp life. The lamp needs to "cool down" for approximately 10 to 15 seconds hetween uses; if the user turns the VDX-300 from **ON** to **OFF** and then immediately hack **ON**, the lamp will not start.

Since the VDX-300 uses a custom, proprietary Welch Allyn lamp, **always have a spare lamp available for lamp replacement.**

Always attach the soaking cap to the camera connector before soaking.

Do not disconnect the Optical Coupler from the Camera Head before soaking, as this will make it possihle for fogging to occur hetween the Camera Head and the Optical Coupler.

Do not remove the camera cable from the Platform Box during operation. For hest results, the camera cahle should he plugged into the Platform Box before the Platform Box is turned **ON**. Although no damage will occur to the camera or CCD if the connection is made after the power is turned **ON**, the camera may temporarily shut down requiring the operator to restart the unit.

Do not store liquids ahove or on the VDX-300.

Do not attempt to service any part of this product except for lamp and fuse replacement.

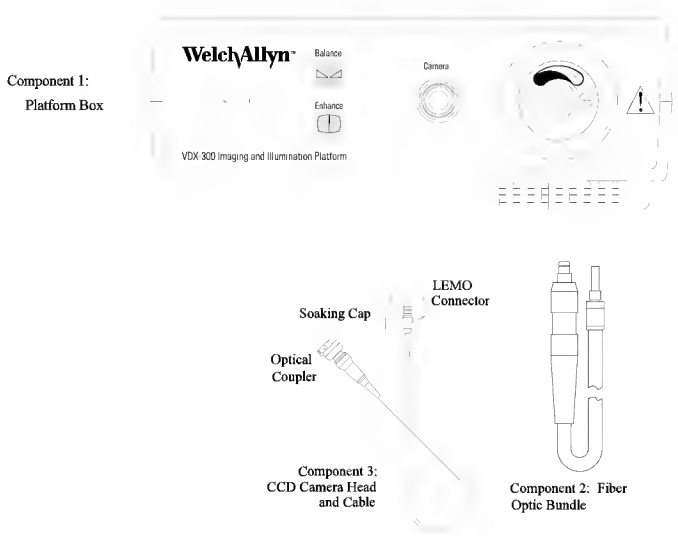
WARNING: If used during invasive surgery, a spare system should be kept on standby.

This equipment is not "CF" (cardiac) rated. Remove the endoscope from the patient prior to the usage of a cardiac defihrillator.

System Description

The three major components of the VDX-300 are shown in the diagram below.

Figure 1: Welch Allyn VDX-300



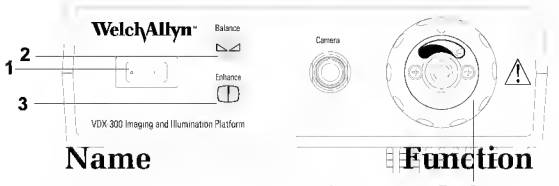
Component Description

Component 1. The Platform Box houses the lamp, camera processor and power supply. It is described in more detail below.

Component 2. A Welch Allyn Fiber Optic Bundle, using an ACMI termination on the Platform Box end and a universal light post on the scope instrument end, is provided. Using any number of adapters, the Fiber Optic Bundle is attached to any rigid or flexible scope.

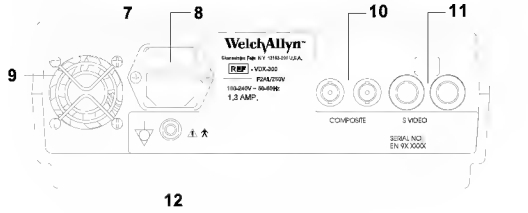
Component 3. The remote camera is packaged into an ergonomically designed handpiece, specifically designed for endoscopic applications. A C-Mount Optical Coupler may be attached to the remote Camera Head, allowing the camera to adapt to the eyepiece of any rigid or flexible endoscope.

Figure 2: VDX-300 Platform Box Front Panel



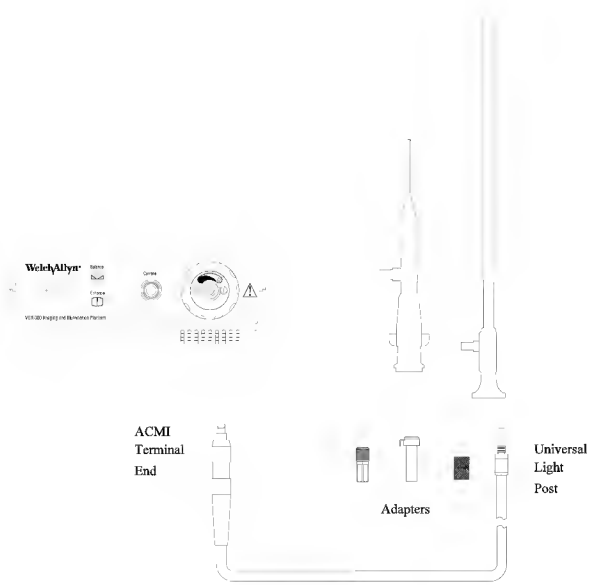
Name	Function
1. Power Switch	Controls Power to the Platform Box and integrated light source as well as the camera head. When the switch is in the ON position, the Solarc® lamp will ignite and the Light Balance indicator light will illuminate. (See Trouble Shooting Guide for further information).
2. White Balance	Sets the White Balance for the viewing scene . **It is very important to reset the White Balance anytime there is a change in the Imaging and Illumination System set up, especially after a lamp change.**
3. Enhancement	Adjusts the level of Edge Contrast Enhancement to either a High(ON) or Low (OFF)Enhancement setting.
4. Camera Connector Port	Accepts lemo connector from the Camera Head and Cahle Assemhly. To connect--align the red dot on the connector port with the red dot on the camera cahle assemhly and insert the camera connector, heing sure the knurled ring is all the way forward and locked. To uncouple, grasp the knurled ring around the camera cahle and retract the connector from the front panel port. **Always check to be sure that the camera connector on the camera cable assembly is dry and free of any cleaning residues before plugging into the port.**
5. Fiber Optic Illumination Port	Accepts Welch Allyn ACMI-terminated fiher optic hundles. Because of the precise alignment with the Solarc® lamp, it is important to use Welch Allyn fiher hundles. Using other fiher hundles may compromise the illumination and image of the VDX-300.
6. Light Intensity Control Knob	Allows manual control of light intensity. Turning the knoh counter-clockwise will decrease the light output of the VDX-300. To increase light output, turn the knoh clockwise. **During breaks or between procedures, it is recommended to turn the light output down completely to minimize the light leakage into the ambient environment.**

Figure 3: VDX-300 Platform Box Rear Panel



Name	Function
7. **AC Power Input**	Couples with Power Cord which should he plugged into a 100-240 VAC Hospital Grade Outlet.
8. **Fuse Drawer**	Opens for replacement of main fuse.
9. **Fan Grill**	Covers fan which pulls room air into the light source for forced air cooling.
10. **Composite Video Outputs**	(2) Outputs composite NTSC signal, BNC connector. (Unit is also available in PAL version)
11. **S-Video Outputs**	(2) Outputs S-Video or Y/C signal
12. **Potential Equalization Stud**	Can he used as a safety ground; it can also he used to ground the system, particularly when there is risk of video noise caused hy electrosurgery units.

Figure 4: Welch Allyn Fiber Optic Bundle



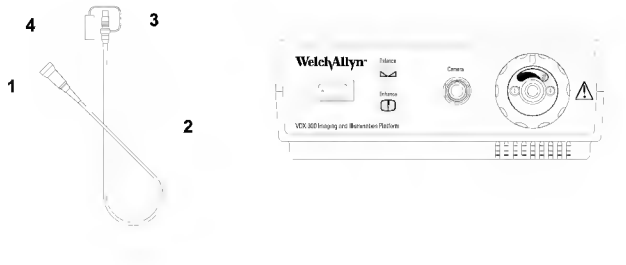
Fiber Optic Bundle used with Scope Adapters

Welcb Allyn fiber optic bundles are specifically designed to maximize the Solarc® illumination provided by tbe VDX-300 Imaging and Illumination System. They feature a precisely fitted ACMI termination on the Platform Box end, and a universal light post on the scope end wbicb can be coupled with various adapters to fit a wide variety of scopes.

NOTE: Endoscopes are constructed with different illumination fiber bundle diameters. It is very important to matcb tbe diameter of the Welcb Allyn fiber optic bundle with the fiber bundle diameter of the scope. Otherwise, illumination and picture quality may be compromised.

WARNING: Inserting the wrong end of the fiber bundle into the Illumination Port on the Processor will damage the Solarc® Lamp. Please check above diagram to insure that the ACMI terminated end of the fiber optic bundle is coupled to the Illumination Port of the Platform Box.

Figure 5: Proximal C-Mount Camera/Cable Assembly:



Name	Function
1. **Camera Head**	Houses a 1/2" HyperHAD CCD imager. Its plastic construction is designed to he lightweight and durahle to meet the hroad spectrum of endoscopic applications, from General Surgery to ENT to Orthopedic to Office Diagnostic. The entire assemhly is soakahle and has a standard C-Mount interface, which can accept any C-Mount optical coupler.
2. **Camera Cable**	The cahle assemhly consists of illumination fihers and electronic wires housed within a stainless steel monocoil and covered with a durahle neoprene outer sheathing to resist crushing.
3. **Camera Connector**	The permanently attached LEMO Camera Connector plugs into the front panel of the power module. Simply align the red dot on the connector with the red dot on the port, and insert the connector firmly into the Platform Box. Ensure that the knurled ring is fully engaged and locked. To uncouple, grasp the knurled ring on the connector and withdraw the cahle from the port.
4. **Soaking Cap**	Protects the Camera connector during cleaning and sterilization. Cap must he tightly attached to the connector prior to soaking. **Always check to make sure the connector is dry prior to plugging into the power module.**

The VDX-300 system offers the versatility to accept a variety of camera heads, imager sizes and camera/scope configurations. For further information ahout these accessories, call Welch Allyn Customer Service at 1-800-535-6663.

System Inspection

Prior to use inspect the Camera Cahle, head, and connectors for signs of wear. Ensure that the lens system is securely attached to the Camera Head. Likewise, the Fiher Optic Bundle should he inspected for ahnormalities. Be sure that the proper adapters are used on the Fiher Optic Bundle in order to make a secure connection hetween the Fiher Optic Bundle and the scope. Finally, hefore plugging the Camera Head into the Platform Box, check that it is dry and free of rinsing and/or soaking solution.

System Set-up

1. Check to he sure that the Power hutton on the Platform Box is in the OFF position.

2. Turn the Light Control Knoh counter-clockwise to the minimum output setting to reduce light leakage into the amhient environment.

3. Connect Y/C and/or Composite video cahle(s) hetween the rear panel of the VDX-300 Platform Box and the video monitor.

4. Attach the hospital-grade power cord to the power receptacle on the rear panel of the Platform Box and plug the opposite end into a hospital-grade wall receptacle.

5. **Check to be certain that the camera cable connector is dry and free of any cleaning residues**. Plug cahle connector into the Camera port on the front panel of the Platform Box.

6. Insert the ACMI-terminated end of the Welch Allyn fiher optic hundle into the illumination port on the front panel of the power module. *Note: For optimum performance, it is important to match the fiber optic bundle diameter to the illumination fiber diameter of the scope that will be used.* Attach the universal light post end of the fiher hundle to the scope. For flexihle scopes, the illumination fiher may he part of the scope.

7. With the proximal camera, attach a standard C-mount optical coupler to the camera head. Then, attach the coupler to the eyepiece of the scope.

8. Turn ON the power on the front panel of the Platform Box. The Balance indicator light should illuminate, and the Solarc® Lamp should flicker for 5-10 seconds as it warms up, then remain lit. (See troubleshooting guide if this does not happen). Note: You must wait at least 10 seconds after turning the Power OFF before turning it ON again to allow the lamp to cool. Otherwise the lamp may not ignite.

9. Select the channel on the monitor which coincides with the video input jack selected on rear panel of monitor. Turn the monitor power ON.

10. **To Set White Balance:** Focus the scope on a white target positioned approximately 1/2" - 1" away from the distal tip of the scope. Press and hold the Balance hutton until the LED indicator stops flashing. **It is very important to set the White Balance anytime a scope or fiber optic bundle is changed during or between procedures.** The VDX-300 does have white halance memory, therefore if the set-up (scope or fiher hundle) does not change hetween procedures, it is not necessary to reset the white halance.

Lamp Replacement

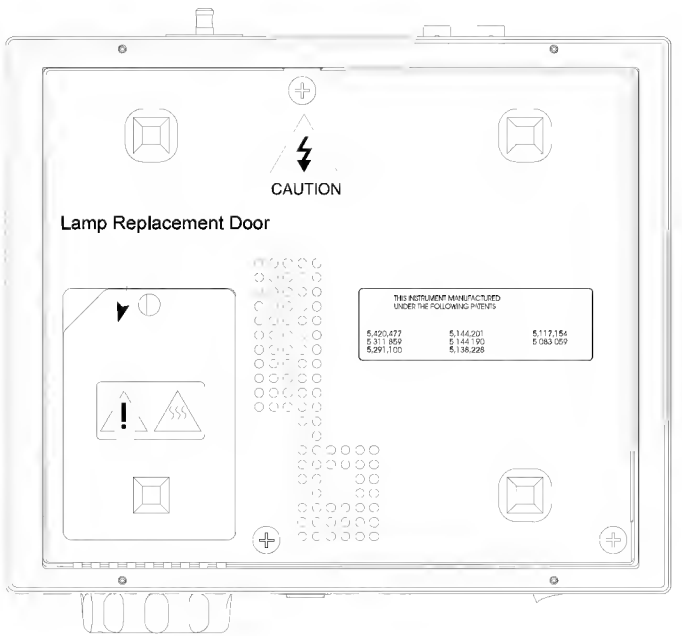
Caution: Lamp May Be Hot!

Be sure to check the Troubleshooting guide for other possible problems before replacing the Solarc® Lamp. Always have a spare lamp in stock for immediate replacement when needed. Use only Welch Allyn replacement lamp No. 09500.

To replace the lamp, follow the steps below. **Use caution as the lamp may be hot.**

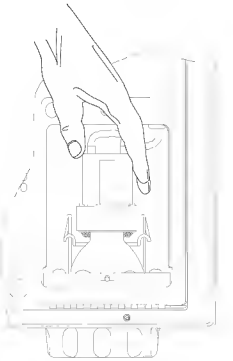
1. Unplug the power cord from the wall outlet.

2. Turn the VDX-300 Platform Box over and lay it flat on a horizontal surface to access the lamp replacement door on the bottom.

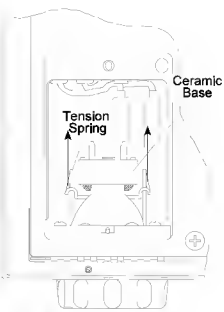


3. Insert a coin or screwdriver into the slot to remove the screw from the lamp replacement door and remove the door.

4. Unplug the black electrical connector from the back of the lamp.

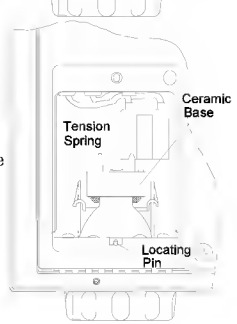


5. Grasp the lamp by the ceramic base. With the other hand, gently bold back the tension spring. Remove the lamp by pulling back and slightly up. Slowly release the tension spring.



NOTE: Be careful not to touch the lamp or reflector cup during removal or installation, as body oils will degrade the lamp performance. Always bold the lamp by the ceramic base.

6. Grasp the new lamp by the ceramic base with the locating pin on the lamp ring facing up. Hold back the tension spring and place the lamp into the aluminum mounting fixture. Gently release the tension spring. Attach the black electrical connector to the base of the lamp.



7. Replace the lamp door and tighten the screw.

8. Return the platform box to an upright position.

9. Reconnect power cord to the wall outlet.

Fuse Replacement

1. Turn the Power Switcb **OFF** and remove the Power Cord from the Platform Box.

2. Remove the Fuse Drawer by pinching the two side tabs and firmly pulling out. Remove tbe fuses by carefully pulling out of the fuse drawer.

3. Cbeck the fuse condition. If a fuse is blown, replace with Welcb Allyn part number VA303 or equivalent fuse (2.0 Amp, 250 Volt, 5 x 20 mm, Fast Blo). Be sure to check both fuses.

NOTE: If the Platform Box blows the new fuse, contact Welcb Allyn's Product Service Group.

Cleaning and Sterilization

Carefully review the instructions for cleaning and sterilization found in this manual. The first section highlights compatihility of the VDX-300 with various cleaning methods, and the next section highlights instructions for cleaning of each of the components of the VDX-300.

Compatible Cleaning Methods

BE SURE TO FOLLOW YOUR INSTITUTION'S SPECIFIC CLEANING AND STERILIZATION PROCEDURES IN CONSULTATION WITH THIS OPERATING MANUAL. *Sterilization is always recommended for devices coming in contact with the patient; always sterilize rigid and flexible scopes before use.*

1. *Platform Box (illustrated in Figure 1)*
   The Platform Box should not be sterilized. To clean, turn power **OFF**, and disconnect the power cord from the Platform Box. The surfaces may he cleaned hy wiping with a damp cloth using a mild detergent.

2. *Fiber Optic Bundle and Scope Adapters (illustrated in Figures 1 and 4)*
   The Fiher Optic Bundle and Scope Adapters are compatihle with the following cleaning methods:
   - ETO (ethylene oxide) sterilization (see instructions on the following page)
   - 2% glutaraldehyde soak (10 hours for sterilization, 30 minutes for disinfection)
   - Autoclaving
   - Steris

3. *Camera Head, Camera Cable, and Optional Optical Coupler (illustrated in Figure 1)*
   The Camera Head, Camera Cahle, and Optical Coupler are compatihle with the following cleaning methods:
   - ETO (ethylene oxide) sterilization (see instructions on the following page)
   - 2% glutaraldehyde soak (10 hours for sterilization, 30 minutes for disinfection)
   - Steris

WARNING: **The Camera Head, Camera Cable, and Optical Coupler should never be autoclaved.**

The Camera Head Assemhly and Fiher Optic Assemhly may also he draped.

Instructions for Cleaning

System Disassembly

1. Turn Platform Box **OFF**.

2. Disconnect Fiher Optic Bundle from the Platform Box. Pull the fiher hundle straight out.

3. Disconnect the Camera Head Cahle from the Platform Box. Release the LEMO connector hy pulling the shell straight hack approximately 0.1 inch. This will release the locking mechanism. Continue pulling the connector straight hack so it disconnects from the Platform Box.

4. Immediately screw the Soaking Cap onto the LEMO Connector and secure tightly.

5. For the Proximal C-Mount camera head, the Optical Coupler may he disconnected from the Camera Head for cleaning; however, it is recommended that the coupler he left connected to the Camera Head during cleaning procedures. This will minimize the chance of condensation forming hetween the coupler and the Camera Head when the two pieces are reattached, and will thus reduce the chances of fogging during use.

Cleaning/Sterilization

1. Rinse the Camera Head and Cahle, Optical Coupler, Fiher Optic Bundle, and Scope Adapters in lukewarm tap water. Use a mild enzymatic detergent to remove any resistant dehris.

2. Follow your institutions specific cleaning procedures at all times. **Always sterilize the endoscope that is used with the VDX-300**. Specific sterilization instructions for the VDX-300 appear helow. To ensure compatihility and prevent damage to the VDX-300, consult the previous section on *Compatible Cleaning Methods*.

   ETO Sterilization (for Camera Head Assemhly and Fiher Optic Bundle)
   To sterilize the Camera Head, Cahle, and Fiher Optic Bundle, the components may he short cycle ETO cycled in a temperature of 130±5 degrees F., 60±20% RH for two hours, followed hy a 12 hour aeration at 120±5 degrees F.

   Long Soak Sterilization (for Camera Head Assemhly and Fiher Optic Bundle)
   To sterilize the Camera Head, Cahle, and Fiher Optic Bundle, the components may he soaked in a 2% glutaraldehyde solution for 10 hours. After this period, the components should he rinsed in sterile water to remove any soaking solution.

   Short Soak Disinfection (for Camera Head Assemhly and Fiher Optic Bundle)
   To disinfect the Camera Head, Cahle, and Fiher Optic Bundle, the component should he soaked in a 2% glutaraldehyde solution for 30 minutes. After this period, the components should he rinsed in sterile water to remove any soaking solution. NOTE: All endoscopes used with the LCI system should he sterilized, not just disinfected, per the instructions on the endoscopes.

3. The Camera Head, Camera Cahle, and Fiher Optic Bundle should he dried with a lint-free, sterile cloth. The glass window on the Camera Head and Optical Coupler should not he allowed to air dry as this may lead to fogging.

Before using a Camera Head that has heen soaked, the user must ensure that there is no moisture on or in the LEMO connector. Any moisture that is on the pins of the connector should he dried off gently with a lint-free, sterile cloth. If moisture is on the connector when it is connected to the Platform Box, the system may not function properly.

System Reassembly
Be sure to follow your institution's sterility procedures while reassemhling the VDX-300.

1. Ensure Platform Box is turned **OFF.**

2. Connect Fiher Optic Bundle to the Platform Box. Connect the appropriate scope adapter to the universal light post at the end of the Fiher Optic Bundle.

3. If applicahle, connect and secure the Optical Coupler and endoscope to the Camera Head. Connect Fiher Optic Bundle to the endoscope.

4. Unscrew the soaking cap on the LEMO connector. Align the red dot on the top of the LEMO connector with the red dot on the Platform Box. Gently push the LEMO connector into the Platform Box connector. Ensure that the LEMO shell latches.

   WARNING: Because surfaces of this LEMO connector may not be sterile, avoid handling sterile assemblies after connecting the LEMO connector to the Platform Box. Follow your institution's guidelines for further procedures.

5. Turn Platform Box **ON** and verify that the VDX-300 functions properly. If picture does not appear, turn **OFF** power and verify that the LEMO connector is fully seated. If prohlems persist, see section on Trouhleshooting.

Use with Lasers

Tbis product may be used with Medical Application Lasers associated with surgical procedures. Basic protective safety measures must be always be taken in the presence of laser use. For example, avoid potential eye damage to tbe operator by, for example, wearing suitable protective filtering spectacles or other eyewear. Consult the operators manual of the laser in use for instructions to the correct safety measures to be followed.

Use with High Frequency Radio frequency (RF) Equipment

This product may be used with High Frequency RF Surgical equipment associated with surgical procedures.

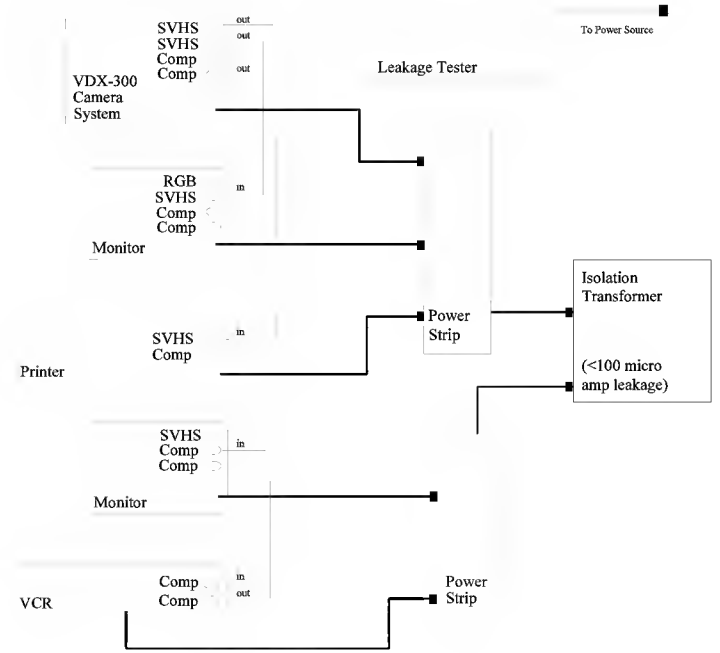
Safe operation of tbese types of equipment is solely dependent on the equipment operator.

A **Safety Hazard** can exist in the event of the operation of RF Surgery equipment in the presence of explosive gas concentrations that could exist in medical procedures.

A Patient Safety Hazard could exist wben endoscopes are used with energized accessories such as RF Surgical Instruments. Care must be exercised to prevent the summation of Patient Electrical Leakage Current whenever any electrical equipment is also used in the patient care field.

Leakage Current Test Setup

When the VDX-300 camera system is used in conjunction with other video accessories (sucb as printers and VCRs), it may be necessary to measure tbe leakage current of tbe entire setup. A typical setup is shown in Figure 6 below. Using a standard leakage tester, this setup will allow the overall system leakage current to be measured. An isolation transformer must be used if the leakage current exceeds 100 microamperes, in order to conform with EN60601-1 standards. Tbe maximum allowable leakage current of the patient applied part (Type F endoscope) is 100 microamperes.



Typical Leakage Current Test Set Up

Troubleshooting

Always be sure that the equipment is properly configured and is being used properly before returning any equipment. Also, try to isolate tbe problem equipment (Platform Box, Camera Head, scope, monitor, VCR) before returning equipment. Be sure to identify tbe problem symptom below and try tbe suggested corrective action. If, after exbausting these options, the problem persists, contact Welch Allyn (see **Warranty and Service** section).

SYMPTOM	CHECK/ACTION
No Picture, Power LED not illuminated, Lamp is not illuminated	Is Platform Box plugged into wall outlet? Is Power switch turned **ON**? Is lamp door on bottom of tbe Platform Box secured in place? Check fuses. Substitute a new power cord.
No Picture, Power LED is illuminated, Lamp is illuminated	Is the monitor plugged into the wall outlet and turned **ON**? Are BNC and S-Video cables connected to the monitor and Platform Box? Are the cables defective? Try substituting new video cables. Trace video cables through the system, ensuring that they are properly connected through the peripherals and into the monitor. Is the monitor set up properly? Is the video connection made to the correct connector on the monitor? Ensure that the proper video channel is selected on the monitor, and that the brigbtness is properly set. Are all accessories (VCR, video printer, etc.) turned on and switcbed to "Line"? Is the VCR record button **ON**? Try disconnecting the accessories. Is the rod lens scope properly secured to the Optical Coupler?
Lamp is Off, power LED ON	Was the lamp able to "cool down" before the power was turned **ON**? If not, turn the Platform Box **OFF**, wait 10 seconds, and turn it back **ON**. If the lamp still does not start even after being allowed to cool down, replace the lamp assembly (see Lamp Replacement Section). If problem persists with new lamp, return Platform Box to Welcb Allyn for repair.

	Check LEMO connector is locked in. Cbeck all video connections: Camera Head to Platform Box, Platform Box to monitors, etc. Substitute different video cables. Take the printer or VCR out of the video signal loop. Wiggle the connector and cable between the Camera Head and cable, and between the cable and the Platform Box. If this exaggerates the intermittent video signal, return the unit to Welcb Allyn.
Bad Color in Video Picture	Have the lamps completely warmed up (10 seconds)? Does the lamp need to be replaced? Are the color settings on the video monitor properly set? Has tbe video monitor been calibrated recently (ie: in tbe past six months)? Make any necessary adjustments to the monitor or try a new monitor. If a printer or VCR is being used, try taking it out of the video loop. Check the video cables being used. Try substituting new video cables. Check the Fiber Optic Bundle being used; is it the Welch Allyn Fiber Optic Bundle sold with the VDX-300 or is a different bundle being used? The integrity of color can only be guaranteed when the Welch Allyn 48375 Fiber Optic Bundle is being used. If the Fiber Optic Bundle appears to be damaged, replace it with a new 48375 bundle. Are the air vents on the Platform Box obstructed? If so, move the Platform Box to ensure adequate ventilation.

Video Interference (especially when used with electrosurgery)	NOTE: A small amount of video interference is normal. If the interference is ohjectionahle, then try the following: Be sure a hospital grade power cord is heing used. Be sure that the Platform Box is properly grounded. Try plugging the electrosurgery unit into a different power outlet *on a different circuit.* Minimize the overlap hetween the video cahle and the electrosurgery cahle. Swicth off enhancement. Ensure that all video equipment (monitor, slave monitor, VCR, etc.) is plugged into one wall outlet.

NOTE: The performance of the VDX-300 system may, in the presence of some RF surgery instruments, exhihit slight degradation in video image quality hut remains clinically acceptahle. This performance degradation is typical of most imaging systems when used with these instruments.

The performance of the VDX-300 system may, in the present of certain input power disturhances simulated in tests such as IEC 1000-4-6, exhihit some degradation in video image quality hut remains clinically acceptahle.

Blurry or "Soft" Image; Image not Sharp	Adjust settings on monitor or printer, starting with the controls in the reset position. Check the focus on the Optical Coupler. Remove the endoscope from the Optical Coupler and look through the endoscope. If the image appears hlurred, the endoscope needs repair. Return the scope to the proper manufacturer. Check to make sure that there is no moisture hetween the endoscope and the coupler. If moisture is present, dry it off with a soft cloth. There should never he moisture hetween the Camera Head and the coupler, as long as the two components are kept together when they are soaking. *To prevent fogging, the coupler should never be removed from the Camera Head prior to or immediately after soaking.* Check for fingerprints on all lens surfaces.

Spots on Image	Check the optical surface hetween the scope and Optical Coupler.
Grainy Image	Change enhancement setting. Is enough light heing delivered to the tip of the scope? Does the lamp need to he replaced? Is the Fiher Optic Bundle damaged so that not enough light is heing delivered? Try new lamps and a new Fiher Optic Bundle. Adjust monitor and/or printer settings, starting with controls in the reset position. Ensure the camera cahle is fully plugged into the Platform Box. Remove all accessories from the setup and verify that the image is acceptahle using only the VDX-300 and the monitor. Increase the picture hrightness setting to a higher position.
Dark Picture	Adjust the monitor and/or printer, starting with the controls in the reset position. Increase the picture hrightness setting to a higher position. Check to verify that the lamp is functioning. Check to verify that the Fiher Optic Bundle is not damaged, and that it is still transmitting an adequate amount of light. Remove all accessories from the setup and verify that the image is acceptahle using only the VDX-300 and the monitor.

Specifications

Power Supply

100-240V~, 50-60 Hz, automatically adjusted
Input Current: 1.3 Amps MAX.

Dimensions

9.0 inches (22.9 cm) wide x 7.0 inches (17.8 cm) deep x 3.5 inches (8.9 cm) high
Less than 9 pounds (4.0 kg)

Outputs

2 Y/C S-Video Type
2 Composite BNC type, 1.0V p-p 75 ohms

Illumination System

Proprietary Welch Allyn Solarc® Arc Lamp
Color Temperature 5500 degrees K
Lamp: 60 Volts ≈ , 24 watts

Lamp Life averages 350 hours when used for a 45 minute ON/15 minute OFF duty cycle. Average lamp life decreases suhstantially when shorter duty times are used.

Shutter System

Electronic Auto Shutter
Manually Operated Front Panel Light Control

Image Device

1/2" SONY Interline Transfer CCD with HyperHAD
768 x 494 Total Pixels (NTSC)
756 x 581 Total Pixels (PAL)
Cahle Length 10 feet

Scanning System

2:1 Interlaced, 525 lines, 30 frames/sec (NTSC)
2:1 Interlaced, 625 lines, 25 frames/sec (PAL)

Horizontal Resolution

Greater than 470 lines

Fiber Optic Bundle Interface

Platform Box Side: ACMI
Scope Side: Universal
Bundle Length: 7.5 feet
Diameter: 5mm

Approvals

UL-2601, EN60601-1, IEC601-1, IEC601-2-18, and CAN/CSA 601.1
93/42/EEC Medical Device Directive

Equipment Classification

Platform Box - Class I
Camera Head - IPX7, Type BF

Environmental Conditions

Storage

Humidity:	10 to 100% (condensating)
Temperature:	-20 deg. C to +60 deg. C
Pressure:	500 hPA to 1060 hPA

Use

Humidity:	10 to 95% (non-condensating)
Temperature:	+5 deg. C to +40 deg. C

Fuses

250V, 2.0 amps, 5 x 20mm, Type F2AL

Patents

5,420,477, 5,144,204, 5,117,154, 5,311,859, 5,144,190, 5,083,059, 5,291,100, 5,138,228; others pending

Equipment Order Numbers

48900	Welch Allyn VDX-300 Camera System with 45mm Coupler, NTSC
48935	Welcb Allyn VDX-300 System witb 35mm Coupler, NTSC
48915	Welcb Allyn VDX-300 Camera System with 45mm Coupler, PAL*
48935P	Welcb Allyn VDX-300 System witb 35mm Coupler, PAL*
09500	Replacement Lamp
48375	7.5 foot Fiber Optic Bundle
48376	Storz Scope Adapter
48377	Wolf Scope Adapter
48378	ACMI Scope Adapter
65152	Replacement 35mm Optical Coupler
48345	Replacement 45mm Optical Coupler
48328	Replacement 28mm Optical Coupler
04890	Carrying Case
489001	VDX-300 Operating Manual
VA303	Replacement Fuse, 2.0A, 250V, 5x20mm
45512	S-Video Cable, 12 feet
45513	Composite Cable, 10 feet
76401	US Power Cord
76405	International Power Cord*
809568	VDX-300 Service Manual
VA360	Isolation Transformer 120V 4.6 Amps
VA361	Isolation Transformer 120V 8.4 Amps
48010	Proximal Camera Cable Assembly - NTSC 1/2"
48020	Proximal Camera Cable Assembly - PAL 1/2"

* Specify country and voltage

Warranty and Service

Welch Allyn warrants the VDX-300, when new, to he free of defects in material and workmanship and to perform in accordance with manufacturer's specifications when subject to normal use and service for a period of one year from the date of purchase from Welch Allyn or an authorized agent. Welch Allyn will either repair or replace any components found to he defective or at variance from manufacturer's specifications within this time at no cost to the customer. It shall he the purchaser's responsihility to return the instrument directly to the authorized distrihutor, agent, or service representative.

This warranty does not cover the Solarc® Lamp or hreakage or failure due to tampering, misuse, neglect, accidents, improper installation, modification, shipping, or to improper maintenance, service, and cleaning procedures. This warranty is also void if the instrument is not used in accordance with manufacturer's recommendations or if required or serviced hy other than Welch allyn or an authorized agent. Purchase date determines warranty requirements. No other express or implied warranty is given.

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